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A Society to Promote the Science of Management

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SPECIAL NOTE

The name *Taylor Society* replaces the name *Society to Promote the Science of Management.* This change was adopted in connection with the adoption of the new constitution presented at the annual meeting in New York, December 10 and 11, 1915.

OFFICERS OF THE SOCIETY

President (1916) Harlow S. Person, Hanover, N. H.

Vice-President (1917) Morris L. Cooke, 401 West Walnut Lane, Germantown, Pa.

Vice-President (1916) Charles Day, 611 Chestnut St., Philadelphia, Pa.

Secretary (1917) Henry W. Shelton, 35 College St., Hanover, N. H.

Treasurer (1917) H. K. Hathaway, 18th and Hamilton Sts., Philadelphia, Pa.

MEMBERS OF THE GOVERNING BOARD

All the officers, *ex-officio*.
Arthur E. Barter (1917), Norwood, Mass.
Sanford E. Thompson (1916), Newton Highlands, Mass.

MEMBERSHIP COMMITTEE

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Frank B. Gilbreth (1916), 77 Brown St., Providence, R. I.
Carl G. Barth (1917), 6151 Columbia Ave., Philadelphia, Pa.
C. Bertrand Thompson (1917), 79 Milk St., Boston, Mass.
C. N. Lauer (1918), 611 Chestnut St., Philadelphia, Pa.
Henry T. Noyes (1918), German-American Button Co., Rochester, N. Y.
Harlow S. Person, *ex-officio*.

MEMBERSHIP OF THE SOCIETY

Honorary Member in Perpetuity

Taylor, Frederick Winslow

LIBRARY PERIODICAL DIVISION

Members

Aldrich, John G., (June 1913) New England Butt Co., Providence, R. I.
Babcock, George D., (Dec. 1912) H. H. Franklin Mfg. Co., Syracuse, N. Y.
Barter, Arthur E., (Dec. 1912) Plimpton Press, Norwood, Mass.
Barth, Carl G., (Dec. 1912) 6151 Columbia Ave., Philadelphia, Pa.
Bates, D. M., (Dec. 1912) Lewiston Bleachery & Dye Works, Lewiston, Me.
Bursley, J. A., (Dec. 1914) Univ. of Michigan, Ann Arbor, Mich.
Cooke, Morris L., (Dec. 1912) 401 West Walnut Lane, Germantown, Pa.
Day, Charles, (Dec. 1912) 611 Chestnut St., Philadelphia, Pa.
Diemer, Hugo, (Dec. 1912) Penn. State College, State College, Pa.
Dodge, James M., (Dec. 1912) Link-Belt Co., Philadelphia, Pa.
Feiss, Richard A., (Dec. 1914) Joseph & Feiss Co., Cleveland, Ohio.
Folsom, Eugene L., (Oct. 1915) 101 Washington Ave., Waltham, Mass.
Gilbreth, Frank B., (Dec. 1912) 77 Brown St., Providence, R. I.
Godfrey, Hollis, (Dec. 1912) Drexel Institute, Philadelphia, Pa.
Hall, Keppele, (Oct. 1915) Bangor, Maine.
Hathaway, H. K., (Dec. 1912) 18th & Hamilton Sts., Philadelphia, Pa.
Jenne, Lyle L., (Dec. 1912) 120 E. Washington Lane, Philadelphia, Pa.
Kelly, Timothy, (Dec. 1912) Brighton Mills, Passaic, N. J.
Kendall, H. P., (Dec. 1912) Plimpton Press, Norwood, Mass.
Lauer, Conrad, (Dec. 1912) Day & Zimmermann, Philadelphia, Pa.
Lewis, Wilfred (Dec. 1912) Tabor Mfg. Co., Philadelphia, Pa.
Lichtner, W. O., (Dec. 1912) Newton Highlands, Mass.
Lyall, William L., (Dec. 1912) Brighton Mills, Passaic, N. J.
Merrick, Dwight V., (Dec. 1912) 34 Gramercy Park, New York City.
Noyes, Henry T., (Dec. 1912) German-American Button Co., Rochester, N. Y.
Otterson, J. E., (Oct. 1915) Winchester Repeating Arms Co., New Haven, Conn.
Parkhurst, F. A., (Dec. 1912) 26 Alger Ave., Detroit, Mich.
Person, H. S., (Dec. 1912) Dartmouth College, Hanover, N. H.
Polakov, Walter N., (Oct. 1915) 2910 Singer Bldg., New York City.
Regan, J. C., (Dec. 1912) The Timken-Detroit Axle Co., Detroit, Mich.
Scheel, H. V. R., (Dec. 1912) Brighton Mills, Passaic, N. J.
Tabor, Leroy, (Nov. 1912) Tabor Mfg. Co., Philadelphia, Pa.
Thompson, C. Bertrand, (Nov. 1912) 79 Milk St., Boston, Mass.
Thompson, Sanford E., (Dec. 1912) Newton Highlands, Mass.
Tyler, Victor M., (June 1913) Acme Wire Co., New Haven, Conn.
Wolf, Robert B., (Oct. 1915) 128 Prospect St., Berlin, N. H.

Associate Members

Adams, Mason T., (Oct. 1915) Thomaston, Conn.
Arkell, Bartlett, (Dec. 1912) 95 Broad St., New York City.
Ayer, Fred R., (Oct. 1915) Bangor, Maine.
Beall, F. F., (Oct. 1915) Packard Motor Car Co., Detroit, Mich.
Bruce, John M., (Dec. 1914) 5710 Grand Central Terminal, New York City.

Carlin, Joseph A., (Oct. 1915) 634 So. Yewdall St., Philadelphia, Pa.
Cook, A. Merriam, (Dec. 1912) 604 Dickson Bldg., Norfolk, Va.
Dart, William C., (Jan. 1914) R. I. Tool Co., Providence, R. I.
Eaton, William H., (Oct. 1915) Pittsfield, Mass.
Galloway, Dr. Lee, (Nov. 1913) N. Y. University School, New York City.
Herrmann, Milton C., (Dec. 1914) 31 Thomas St., New York City.
Kent, Robert T., (Dec. 1912) 64 Orange Road, Montclair, N. J.
Kent, William, (Dec. 1912) 64 Orange Road, Montclair, N. J.
Langley, Ralph W., (June 1913) Acme Wire Co., New Haven, Conn.
McGregor, Prof. J. S., (Dec. 1912) Columbia University, New York City.
Mixter, C. W., (Dec. 1912) 313 Humphrey St., New Haven, Conn.
Robinson, Prof. Edward, (April 1914) Univ. of Vermont, Burlington, Vt.
Williams, John H., (Dec. 1912) 772 Park Ave., New York City.
Zachert, Arthur R., (Oct. 1915) Bayonne, N. J.

Junior Members

Adam, W. J., (Dec. 1912) 231 West Milton Ave., Rahway, N. J.
Bartholomaei, H. A., (Oct. 1915) 5 Broadway, Bangor, Maine.
Benedict, H. G., (Dec. 1912) Madison Motors Co., Anderson, Ind.
Dowd, M. S., (Dec. 1912) Herrmann, Aukam & Co., So. River, N. J.
Fraser, R. B., (June 1913) Sewell-Clapp Envelope Co., Chicago, Ill.
Goodell, Francis, (June 1913) 4432 Chestnut St., Philadelphia, Pa.
Green, Arthur B., (June 1913) Cumberland Mills, Maine.
Hemmerly, Wm. D., (Jan. 1914) 310 Yale Ave., New Haven, Conn.
Laine, W. B., (Dec. 1912) 75 Lenox Ave., East Orange, N. J.
Northime, Frank E., (Dec. 1912) 5040 Osage Ave., W. Philadelphia, Pa.
Rockwell, Willard F., (Dec. 1913) 870 South St., Roslindale, Mass.
Schwartz, C. W., Jr., (Dec. 1912) West Walnut Lane, Philadelphia, Pa.
Scoville, John H., (Oct. 1915) 8 Beacon St., Boston, Mass.
Shelton, Henry W., (Dec. 1912) Dartmouth College, Hanover, N. H.
Shipley, Albert R., (June 1913) Seth Thomas Clock Co., Thomaston, Conn.
Vaughan, Aubrey W., (Dec. 1912) Am. Optical Co., So. Bridge, Mass.
Walsh, D. J., Jr., (Dec. 1914) Herrmann, Aukam & Co., Lebanon, Pa.
Whitaker, S. Edgar, (Jan. 1913) 63 Elm St., Saxonville, Mass.

Applications for Membership

The following applications for membership are pending:

Frederic G. Coburn, Naval Constructor, U. S. Navy, 172 Fuller St., Brookline, Mass.
Walter D. Fuller, Mgr. of Accounting Dept., The Curtis Publishing Co., Philadelphia, Pa.
Bryant B. Glenny, Jr., 253 Main St., Buffalo, N. Y.
Karl Herrmann, Supt. Herrmann, Aukam & Co., Lebanon, Pa.
Edwin Krause, Works Manager, The Davis Sewing Machine Co., Dayton, Ohio.
Fred L. Lamson, Treas. Norwalk Tire & Rubber Co., Norwalk, Conn.
Carroll C. Miles, 127 Park Side Ave., Brooklyn, N. Y.
Thomas W. Mitchell, University of Minnesota, Minneapolis, Minn.
Fayette F. Read, 31 Plimpton St., Walpole, Mass.
Richmond Mayo-Smith, Director, Plimpton Press, Norwood, Mass.
Frank R. Wallace, Eaton, Crane & Pike Co., Pittsfield, Mass.

NEXT MEETING AT ANN ARBOR, MICHIGAN

The next meeting of the Society will be held at Ann Arbor, Michigan, on May 11, 12 and 13. This meeting will include an important address on the general development of Scientific Management to date; addresses on Scientific Management as applied to various types of industry; and round-table discussions on the present stage of development of Scientific Management in leading industries.

The chairman of the local committee is Prof. Joseph A. Bursley, University of Michigan, Ann Arbor, Michigan, who will be glad to answer all inquiries as to details.

COMMENT AND NEWS

The revised constitution as presented at the annual meeting was submitted to letter ballot of the Society and adopted, only one vote in the negative so far having been received. For the use of members and those wishing to make application for membership, a large edition of the new constitution has been printed as a supplement to the November Bulletin. Members wishing copies to send to those whom they would like to invite to become members of the Society may obtain them upon application to the Secretary. New application blanks corresponding to the requirements of the new constitution have also been printed and may be had upon application.

Mr. Hathaway for the committee on the constitution gave the following reasons for the changes recorded.—

1. The Society was formed by Taylor's followers to perpetuate and advance Taylor's work. Therefore, the name Taylor Society is more appropriate.
2. It is desirable to more definitely confine membership to those committed to Scientific Management as founded by Taylor, to insure lasting credit being given where credit is due.
3. The necessity of defining more clearly qualifications for membership and grading. A class not originally contemplated. has been included, viz., affiliate members. Membership in this class should be considered as an honor to those upon whom conferred.
4. It is desirable to so safeguard membership as to confine it to those who unqualifiedly stand for the principles set forth by Frederick W. Taylor—who are true followers and who conform to the unwritten code of ethics which Mr. Taylor observed and wished his followers to observe: "I can no longer afford to work for money."

Mr. Hathaway felt that the success of the Society consists not in the number but in the quality and high purpose of its members.

The following two letters received, one from Java and the other from Johannesburg, South Africa, are interesting indications of the world wide influence which Mr. Taylor and his work excited.

E.B.L., July 29, 1920.

P. O. Box 138, Johannesburg,
November 20, 1915.

Professor Henry W. Shelton,
Hanover, N. H.—U. S. A.

Dear Sir:—

I notice in the current copy of the American Machinist that a memorial meeting of the S. P. S. M. is being held in Pennsylvania, relative to the late Mr. F. W. Taylor. As I consider that I owe to Mr. Taylor a debt which under any conditions it would be impossible to liquidate—both from his writings and through personal correspondence—it would give me great pleasure to subscribe towards any movement you may be making to perpetuate his memory. Positions I have held as General Manager and now Managing Director of large Engineering Companies are due to a very large extent to the teaching and example of Mr. Taylor.

Do you accept country or foreign members in the Society to Promote the Science of Management as if so I should appreciate full particulars in regard to subscription, etc.

I might refer to the fact that it was only due to the outbreak of the war that I did not have the pleasure of meeting Mr. Taylor personally. Unfortunately, my duties debarred me from leaving South Africa at the time and it is a matter of very keen regret that he has in the meantime been called from labor.

As a keen student for the past nine years of Works Organization and Scientific Management—British, German and American—I personally consider that Mr. F. W. Taylor led the world.

Yours sincerely
(Signed) I. W. Singwood, M.I.M.E., B.S.A.

Djokjakarta,
Nov. 19th, 1915

The Frederick W. Taylor Co-Operators,
Philadelphia, Pa.

Gentlemen:—

In the Dutch periodical "The Engineer" I noticed the establishment of the "Frederick W. Taylor Co-Operators" and its purposes.

On my last journey to Holland I came in contact with results achieved by application of the Taylor system.

These results, however, were achieved in a concrete-brick-manufactory and as I am an Indian tobacco planter, you understand there was not much agreement, but in a Dutch book I read that the T. S.[1] already was used in several brands of agriculture.

I should be very much pleased if you will help and give me some information at what manner I can begin studying the Taylor system for my special purpose and what, in my agriculture case, is the best literature (not French).

For explanation I say, that our tobacco plantations have few agreements with European agriculture, much more with a very large nursery.

Your American method of tobacco breeding has many agreements with ours, only with the great difference that here only the staff are Europeans and all our workmen are natives.

Yours very respectfully,
D. Honig.

Address
D. Honig,
Sub-Master Tobacco Estate "Sendangpitoe"
near Djokjakarta,
Java, Dutch East India.

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[1] Taylor System [Ed.]

"FIELD OF ACTIVITY OF THE SOCIETY"[1]

By H. K. Hathaway[2]

The meetings committee has given a good deal of consideration to the field that this society should cover in its activities, and has endeavored to lay out a program or policy which it believes would result ultimately in the accomplishment of the greatest good along the lines for which it was formed. The membership of this society is at present and probably will in the future be made up largely of two classes. The first class will be those who are managing or are the owners of manufacturing plants in which scientific management is being used. The other class will be largely composed of those who are professionally engaged in the installation of scientific management in various lines.

This society should be a working society,—not one in which papers are read and nothing more comes of them, or in which various committees are appointed to carry on investigations,—these being usually committees of men who are so busy that they cannot devote the time necessary to do the work for which the committee was appointed. This society should conduct investigations along the lines of scientific management for the purpose of collecting and codifying data for the general use of those who are managing plants.

We have two things to do along that line,—first the collection and codification of existing data. Certain members have a great amount of data collected at the various plants in which they have applied or directed the application of scientific management, but these data are not in shape for general use. As a matter of fact when information is needed in regard to things that have been done, rather than attempt to hunt it up on our own files we usually write to the concern in whose plant the data was accumulated. That puts them to more or less trouble, but we sometimes get something out of it. The point I am trying to make is that, for example, instead of Mr. Barth having such a collection, Mr. Cooke having one and having one myself, there should be one place where all data of that sort would be filed and where it would be accessible to those who are entitled to its use.

Such a collection would include such things as standard orders describing the duties of functional foremen in the planning department and in the shop, the handling of materials, printed forms and their uses. It would take in also the various classifications for tools, worked materials and stores. At present every time we have to work up a new classification the question arises,—"Is this classification we are using as a basis the latest thing, or have we got hold of one that has been worked up some years ago and improved upon since that time?"

In the matter of standardization of tools, Mr. Barth is continually adding to the existing data, and in some of the companies—with which I am connected—we are doing something also. At times we may put in considerable time working out a problem already solved by one of the others. All these data now existing and constantly increasing, it seems to me, could be better taken care of by a librarian, under the auspices of such a society as ours.

After the collection and codification of these data we should have to give careful consideration to the matter of distribution. We have two classes of such data.

A.—General or educational information which would be for unrestricted distribution to anybody interested in scientific management.

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[1] Report of Meetings Committee, presented at the Boston meeting, June 28, 1912.

[2] Vice-President, Tabor Manufacturing Co., Philadelphia, Pa.

B.—Technical data, such as time study data resulting from careful and minute observation by such men as Mr. Sanford E. Thompson or Mr. Dwight V. Merrick, and the time study men in various plants. Such data cover the handling of machines or the putting in and taking out of tools,—or Mr. Barth's slide rules, and slide rule formulæ. Information of that nature should not be distributed generally. I know perfectly well that no one engaged in the profession of installing scientific management would care to turn over data of this kind if he thought it would be handed out indiscriminately. Without proper restriction it would go in many cases into the hands of people who would have no right to it,—men who are so-called efficiency engineers, but who are not qualified to make proper use of such data. In many cases if it were handed out indiscriminately, it would be given to employers, manufacturers or owners who would not understand it and would therefore misuse it. To illustrate what I mean, some years ago, when the Link Belt Company of Philadelphia was installing their system, an official of a neighboring concern became interested in the subject and prevailed upon somebody at the company's office to lend one of their slide rules. The slide rule had been made for a certain machine in the Link Belt Company plant in connection with the use of standardized tools,—every one of which could be depended upon to be as good as another, and for use on materials which were standardized to a considerable extent. The man who borrowed the slide rule took it to his works and said: "Here is one of these slide rules,—take it out in the shop and try it out." The foreman had no idea how to work the slide rule in the first place, but he finally managed to set it so that it indicated some speed, feet and depth of cut; and naturally found that it would not work, because it was made for a lathe speeded and fed in a certain way, whereas the lathe to the operation of which they attempted to apply it was not speeded and fed in the same way. The result was that the president of that company got up in a meeting a little later and made the announcement that the Taylor system was absolutely no good. He knew because he had tried it out. A trying out in his case meant taking a slide rule designed for a machine under totally different conditions and endeavoring to apply it to a machine in their shop under conditions which the slide rule was never intended to meet. This is characteristic of incidents showing that such technical data as might be accumulated by this society should be limited in its distribution to those who either have scientific management in use in their plants or those who are installing it under the direction of a management engineer approved by a properly constituted board of this society.

That would be one field,—the codification of all existing data ready for further use. With nearly every job I take on, I have to go through the same thing, simply because the work I have already done has not been properly tabulated, codified and filed so that it is available when I want it.

Another field, a very important one, would be the carrying on of investigations similar to those made by Mr. Taylor in determining the laws that underlie the art of cutting metals. In one direction alone there is a great deal still to be done. Messrs. Gantt, Barth, Merrick and others who worked with Mr. Taylor on that did not begin to finish the job. They got as far as determining how roughing cuts on steel and cast iron should be made with properly ground tools. They did not, however, touch at all the matter of brass or any of the brass alloys, and today if you go into a shop where there is very much brass machine work you will find three or four different kinds of tools, all for the same purpose. There are no right shapes or angles for cutting tools on brass. Nobody knows what speeds you should run on brass. Mr. Barth and Mr. Merrick probably know more about it than anybody else, but even such knowledge as they possess has not been codified. Experiments similar to those already made under Mr. Taylor's guidance in the cutting of metals should be continued in all the phases of metal cutting. We know practically nothing about using milling cutters, twist drills, taps, reamers, etc. Since this was written, Mr. Barth has been making exhaustive experiments in drilling and it is hoped the results may soon be made available. There is just as much to learn concerning the use of these tools as there was in cutting metals with the lathe tools. The conduct of such experiments, it seems to me, would be a proper field for the activities of this society. There is only one thing in the way, and that is that such experiments are naturally very expensive. If carried out by any one concern, the expense is almost prohibitive.

Another line along which investigations could be conducted by this society for the benefit of a great number of people is the matter of accumulating elementary time study data. At the Tabor Manufacturing Company in Philadelphia we have been working along for the last five years accumulating time study data so that we could properly analyze a job of machine work and fix the time for doing that job, although it might differ from any job previously done, basing our computation of the time upon the minute elements that go to make up the job. We have accumulated a vast amount of data at great expense. At the Link Belt Company they have been doing the same thing, and Mr. Merrick is now engaged in doing about the same thing at the Watertown Arsenal; this is going on in every place where scientific management is being installed. Much of the ground Mr. Merrick went over when he was at the Link Belt Company he will have to go over at the Watertown Arsenal, and much of this ground we have already gone over at the Tabor Manufacturing Company. We should have a man who is pretty able along this line engaged in accumulating all the time study data that is necessary for the operation of a machine shop. Such a man could go into a large plant where scientific management was applied and with a proper corps of assistants could accumulate once for all the data that would be necessary in connection with doing any work in any shop in this country,—completing his work probably in three or four years,—and it would be right when we once got it. At the Tabor Company, while we have spent four or five years and had a man on it nearly all that time, we have only about half the data we should have. What we should have done was to put on probably five or six men, taking elementary time study and tabulating it; but this would have entailed a much greater expense than we were justified in incurring. Such an expense, however, would not amount to much if divided up among a large number of concerns interested in the same industry.

What I am coming to is this: that the members of this society who constitute the first group of members of whom I spoke, those who are the owners or managers of plants in which scientific management is in operation, could well afford to contribute a share each toward a fund to defray the expense of such an investigation as I have been speaking about. On the other hand, we have a second group, those of us who have engaged in the installation of scientific management. Our contribution would come in the way of framing and directing the work of investigation and the collecting of data. The result would be that at a much less expense everybody would have much better data available to work with. There are a great many things similar to those I have mentioned that should be taken up. The classification for tools, for worked materials and for stores should be taken hold of by somebody who would work up a standard classification for each class of industry. In the machine shops today operated under scientific management I dare say you will find no two tool classifications that are alike. Errors have crept into the details. Those errors should all be straightened out and corrected, and if one man could be assigned to the task of working up a standard tool classification, having in mind its application to a great variety of industries,—and another man or several men assigned to work up stores classification, etc.,—we would get to a point where we would not have the wide difference in classification which we have at present. It may not seem to matter if there is a difference in the tool classification of the Tabor Company and the Watertown Arsenal or the New England Butt Company. It may not seem to make any difference, but it does. Why? The first thing affected is the elementary time study. Time study data in machine shops is classified under three broad headings,—the handling of machines, changing speeds, etc.,—the handling of the tools with which you do the work,—and the handling of the materials that are worked upon.

The greatest one of these three broad classes is the handling of the tools. In a machine shop doing work of a miscellaneous character, the handling of tools is probably 75% of all the handling time. The handling of machines and materials make up the other 25%. Very few people realize that until they get into it. The putting in and taking out of tools,—using calipers, hammers, chisels, etc., makes up about 75% of the total handling time for machine work of a miscellaneous character.

Now, then, how are we going to classify that data and file it so that we can find it when we want it? One of the most difficult things to do is to classify time study data so you can find it again after you have once taken it. For years we did not know how to classify time study data for machine shops. Mr. Merrick first hit upon the scheme of classifying it under the head of tools, materials, etc. After you have it divided into those three broad divisions, the next thing to do is to subdivide them. The logical and sensible thing to do with data on handling tools is to file it under the tool symbols provided by the tool classification. Suppose we make a time study of the time it takes to handle standard bolts, used for clamping work on the table of a machine, the symbol for which is CBL. The symbol of the bolt then affords a logical index for the data procured as a result of our elementary time studies of the use of tools. The observations we have made at the Tabor Company on the use of these tools are classified and filed under the symbol CBL. The symbol CBL is not truly mnemonic and in an effort to correct this we find that another shop has, for the same tool, adopted a different symbol, CBS or something else, and therefore our symbol does not fit at all, and any data that we send them has to have the symbols changed. There are a number of things of that sort which prevent making the best and fullest use of work that has already been done. The desirability of our classifications being uniform is obvious and if the society could assign a competent man to the task of bringing about a uniform and proper classification it would be a great help to the men adopting scientific management in any plant and a great help to those who are directing the work of installing scientific management.

This data would naturally come under the class of technical data, the distribution of which should be restricted and not given out broad-cast, so as to guard against its being improperly used.

Take the case of elementary time study data. The natural and broad minded impulse would be to make it free to everybody who has a machine shop. What would happen if we did? The recipient would immediately want to set piece rates, figuring the time for a job based on our elementary time units, and would be disappointed to find that the work could not be done in the time computed. Why? Because he has allowed for putting on a bolt or clamp say 65-100 of a minute, and his machinist may take from 1½ to 10 minutes, working as hard as he can, simply because the employer has not standardized the tools. The bolt and clamp this man puts on has first to be found in the bed of the machine perhaps,—then he may have to find a nut, and possibly finds that the thread is damaged. Consequently it takes much more time for a man in this establishment to put a bolt on the job than it does in a shop where the tools have been standardized. Our shop proprietor would not consider that, however. He would say: "I have figured this out,—it says here 65-100 of a minute, and our best man took a minute and a half and another took five or ten minutes." It would be the same with all of the other elementary time units entering into the job. That is why we cannot have data of that sort indiscriminately distributed and must limit its use to those who have the system installed or to those who are installing it under competent direction. Its distribution should be controlled by a board appointed for the purpose.

I should like to see before very long a committee appointed *to devise ways and find the means* for conducting investigations such as I have very imperfectly and briefly described.

With respect to the subject of research work, the first efforts might be devoted to a few things that are much simpler than the ones I have mentioned. Such things for example as the use of the duplicator for making operation orders. There is more than one way to write operation orders. One way to write them by hand with a pencil; another is to make an original copy and then draw off the number you require on a hectograph; and a third way is to use the multigraph machine. Each one has its advantages under certain circumstances and we know in a general way when it is desirable to use each of these; but everybody does not know that and people have to find out the same thing over and over again in different places. It may not seem important at all, but there is the greatest difference between the right way to use a hectograph and the wrong way. A person who uses it the wrong way cannot get much out of it. If it is used the right way one gets fairly good results. At the Tabor Company we have had a man make an investigation as to how to use the hectograph, how to write operation orders and check them from the hectograph, how to use the typewriter ribbon and how long one should last, etc. I had no idea there was any art in using a hectograph but there seems to be. I expect to have that man write that subject up and put it in first-class shape, so that anybody who has occasion to use a hectograph in connection with scientific management will not have to go through that process of finding this out all for himself. That is only one of the minor things that we have to do day in and day out. They are just as important as the art of cutting metals is to the operation of a plant. There is a great field for a competent investigator who can investigate office methods and establish standards based on time studies of various sorts of clerical work.

Another field of activity open to our society is that which is covered by similar societies in general,—that of the presentation of papers on various pertinent subjects. This is very useful, provided it is properly done, but it is my feeling that most of the great societies today accomplish far less good than they might if there were more intelligence used in the selection of the subjects for papers and in the selection of the authors. It is important I think, that we avoid the presentation of papers by people who endeavor to cover too wide a range, resulting in much going over of the same ground in a superficial way and frequent disagreement in matters of detail. Every newcomer to the field of scientific management will have a wild desire to write papers on a subject he is greatly interested in but little qualified to handle, many of them on the same phase of management. The literature of the society would then become, as it has in some of our older societies, a heterogenous mass of more or less conflicting data which serves no purpose. I have in mind at present the transactions of one of the great engineering societies, and any man who wants to get any information from their transactions has a mighty big job before him. It is scattered through large volumes, one subject after another, with absolutely no relation to each other. One may find in a given volume, first, something on gas engines; the next article may be on the handling of coal in Sitka, Alaska; then perhaps one on scientific management or one on standard gear teeth. And so it goes. The result is that those become very nice volumes to place in your book-case and leave there. If you want anything that is in them you do not get it, because it is too much trouble to find it,—the data is not arranged properly. It is my feeling that any papers which are presented before this society should in the first place be in accordance with a classification of subjects, so that we may have one paper covering each subject presented by one man who is competent to write on it. Ultimately, instead of a lot of papers, many presenting conflicting viewpoints and many covering the same ground, a complete library might be had on scientific management, for which we would perhaps have one volume on classification, another on filing, another on time study, another on routing, etc.

In making the remark that every newcomer will have a wild desire to write a paper on a subject he is little qualified to handle, I do not mean to discourage the writing of papers by the younger men. In fact it is my feeling that they are the ones who should write papers. Those of us who are further advanced in the work have not the time. The younger men should have assigned to them the task of writing papers on certain specific subjects or branches of scientific management, but they should not be left to themselves to go at it haphazard or to write out their own opinions, which may or may not be right. They should be given sufficient time to go thoroughly into the subject assigned to them and should have means provided so that they could afford to visit the various plants in order to investigate and thoroughly familiarize themselves with the subjects upon which they are writing. They should also at frequent intervals during the course of preparation of a paper consult with the older men and submit what they have written to them for criticism and for advice and general direction. A man in preparing such a paper should be allowed sufficient time. It should not be a case of being called upon this month to write a paper for presentation next month. A paper so written is almost worthless. He should have the subject assigned to him a year in advance and at frequent intervals it should be the duty of some official of this society to see that he is making some progress on it. If such a course were followed I believe we would get papers that would be of the greatest value to the members. At the present time I know of young men,—newcomers to the field of scientific management,—whom I should like to see assigned to the task of writing on certain subjects, such as "Classification," "Tool Room Practice," "Routing,"—and by that I mean the whole routing scheme from the time you have your specifications or drawing until the time you start work in the shop and begin to get results. Another important subject would be "Functional Foremen," another "The Standardization of Machine Tools," another "The Tabulation of Time Study Data." These are only a few subjects. I know young men who are perfectly competent, with proper direction, to handle them, but I do not know any of the younger men who are competent to do so without proper direction. I repeat that the society should be in a position to compensate those men for their time spent in visiting various plants, making investigations, and collecting the data upon which their papers are to be based. That is another thing for our committee on ways and means to consider. Mr. Taylor's paper on "Shop Management" is today the one classic on scientific management. There is scarcely a thing that any of us can say in this connection that Mr. Taylor has not already covered in his paper. It should, however, be expanded into at least twenty or perhaps forty volumes. A book might be written on each of the four principles as set forth by Mr. Taylor,—the development of a science, the scientific selection and training of the worker, the proper division of responsibility, and securing the proper measure of co-operation between the management and the workmen. In this connection I might say that this latter does not mean securing the workman's co-operation, however, as much as it means securing the management's co-operation with the men. In the old days under the old style of management, we heard a great deal of the desirability of the workman's co-operation, but we never heard anything of the desirability of the management co-operating with the workman. As I have suggested, a volume could be written on each one of these principles, pointing out their application to the solution of a variety of problems.

At the last meeting of the meetings committee it was proposed that the literature of scientific management should be classified under the following heads,—bibliographic, to include all existing literature in its present form and in a classified and accessible form; second, principles,—which I have already spoken of above; third, materials,—covering standards as to grade, quality, purchasing, storing, handling, etc.; fourth, equipment,—including buildings, machinery, tools, standardization and up-keep, and all that would enter into their proper use; fifth, mechanism,—such as classifications, routing, system, cost keeping, instruction cards, etc.; sixth, men,—the selection of workmen, the training and co-operation between the management and workmen, and proper division of responsibility.

Those could again be divided into a great many sub-subjects, each one of them being assigned to a certain man to prepare a paper upon. Among the subjects that have been suggested we have, falling under the heading of general or educational data for general distribution,—"What Constitutes Standard Men?" (who is a first-class man?). There has been a great deal said about a task being set for and assigned to a first-class man,—and what are we going to do with the inferior man? In the first place what is an inferior man or a poor man? A poor man is one usually who is doing something for which he is not fitted. Put him at something he can do and he is no longer a poor man. The first-class man is not the exceptional man,—he is not the wonder or the man who can do the work in almost half the time. He is a good first-class man,—not an incompetent. That could be expanded upon or treated at very great length, so that we could find out what a first-class man is and how to select him for each of a number of different classes of industries.

The "Theory of Standards" is another subject that could be treated at length. "Political Economy for the Workingman" is something that is very much needed. There is practically no effort being made on the part of anybody to acquaint the workmen with the laws of political economy. They have not the slightest conception of them and in fact the ignorance of economic laws extends far beyond the workmen. There are lots of managers,—lots of superintendents, and lots of engineers who know very little about economic laws, so it seems to me it would be a good thing for us to educate the workman at least in the elementary economic laws so that he will not say, as I heard a man say: "If I work too fast I will work myself out of a job. There is only so much work to be done in the world." That was said to me in all good faith by a workman when I was a foreman at Midvale. I was trying to show him how he could increase his output. If we could bring out a paper on political economy for the workman which would make him see that his interest is not in the restriction of output but rather in the increase of output, it would be well.

Another subject might be "The Causes of Soldiering under the Old Type of Management." Under the old type of management the workman was not very much to blame for soldiering,—the management was very much more to blame. That generally comes as a result of the management making it impossible for the workman to work,—forcing him to loaf so that it eventually becomes a habit.

Other subjects for papers might be "Theory of Classification," "Equipment," "The Selection of Employees," Uniform Apprentice System," "Promotion,"—providing definite laws for promotion so that when a man starts in, he realizes that if he is any good he will not remain in the position he is then filling all his life. At the Tabor Company plant we have a well-defined process or routine of promotion. In the planning department there are certain positions filled by boys,—messengers who can carry drawings and instruction cards to the shop. Those boys have before them their next job, which will be that of a recording clerk, the man who checks the sheets,—or the position of clerk in charge of the preparation of route files, operation orders, etc. They in turn have further promotions to look forward to. The men from the shop,—machinists, helpers, etc., have before them opportunities for promotion. The helper has the opportunity of becoming a machinist,—the machinist of becoming a functional foreman in the shop; the functional foreman in the shop and sometimes the men on the machines of becoming functional foremen in the planning department; and after that when we cannot promote them any more we fire them. We have fired some from jobs that paid them $35 per week to jobs that pay them $50, and we have lots more of them there. Now in order to have a definite line of promotion it is necessary to have for every man in the organization an under-study. That is the proper way under scientific management,—not to have men afraid to let anybody know anything about their job for fear they may be fired themselves. Instead of this every man should be working so that he will have somebody ready for his job, so when an opportunity for promotion comes along he can accept it. "Preventive repairs" is another subject that has not been treated at all in any paper I know of. Another subject is "Incentive," which would cover the matter of bonuses, etc. Another subject is "Method of Increasing Ambition." These are only a few subjects that might be brought out, which would fall under some one of the headings that the meetings committee has suggested in endeavoring to outline a policy and programme for papers.

THE PROGRESSIVE RELATION BETWEEN EFFICIENCY AND CONSENT[1]

By Robert G. Valentine[2]

Definition of Scientific Management.

1. By scientific management I mean those principles of business conduct which are both explicit and implicit in the life and work and writings of Frederick W. Taylor.

2. I mean those principles considered in their purity as principles and considered apart from the particular and local applications of them made by Mr. Taylor.

3. I mean those principles considered as principles very gropingly stated by him and as to statement still in their youth, so to speak.

4. I mean those principles considered as one root of economic life, and to that extent thoroughly sound, but still showing clearly in their present statement that they have not been worked into thorough co-ordination with other equally vital principles of the economic and social world.

5. By scientific management I mean further the attempts to apply the principles as stated by Mr. Taylor as they are applied, for example, in the Tabor Mfg. Company of Philadelphia, the Plimpton Press of Norwood, Mass., and the Link Belt Company of Philadelphia.

And the actual methods of applying the principles at those plants I regard as only indicative of what the *real application* of the principles as laid down by Mr. Taylor would be. They are sufficiently indicative, however, to furnish the materials for a sketch of an ideal shop run according to the Taylor principles. They further furnish us, I believe, with the basis for the belief that the principles stated by Mr. Taylor, in so far as they are fully applied, furnish the latest word in the progress of the mechanics of industry. For simplicity in this paper, we shall deal with these principles only from the point of view of the mechanics of production.

I am not forgetful of two important facts in connection with Mr. Taylor's life:

1. That many of the impressions he conveyed in describing his ideas did his ideas themselves and his real spirit great injustice.

2. That his own conception of much that is contained in his writings is in many cases fragmentary and apparently short-visioned.

It is, nevertheless, my belief that when the fullest allowance is made for these two facts, Mr. Taylor's contributions to the industrial world will gradually prove themselves to be among the major contributions to human progress. The human limitations of Mr. Taylor's thinking and methods of expression and the crudities of the application of his principles in practice at the present day will weigh little as compared with the revolutionary effects his conceptions will have on the progress of the world when they are thoroughly understood and freed from the short vision and from the ignorant, the merely imitative, or the shyster practitioner.

It should also be noted at this point that much which is being done under the name of scientific management and much of the criticism of scientific management is only serving to give undue importance to the work of the efficiency charlatan, to the loose social thinker, and to the attitude of the half-informed public, all of which obscures the real issue. The useful thing to do is for all persons honestly interested in the subject to simplify the problem and to try to solve it in its purity apart from considerations which are not of its essence. It is precisely this which both the most earnest advocates of Mr. Taylor's principles and the most earnest advocates of labor had failed to do up to the time of Professor Hoxie's work. If Professor Hoxie can complete his work through digesting the materials he has gathered, and also through making an investigation of labor in its relation to scientific management as he has made of scientific management in its relation to labor, we shall begin to be in a position where we can get at the question of scientific management in a truly scientific fashion.

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[1] Preliminary abstract of an address presented at a meeting of the Society held in New York December 10 and 11, 1915.

[2] Industrial Counselor, Boston, Mass.

Our Problem Today.

Our immediate task together is to see whether we can begin at the present time to get a line on that genuine application of the principles of scientific management which is beneficial to society as against that alleged application which is dangerous to society. I shall try today merely to lay the grounds for the discussion of what I believe to be one basic standard of judgment. If we try to state the problem clearly, I believe that we shall be able to formulate this standard. The standard by which to judge is to ascertain whether any particular application of the principles involves the recognition of a truly independent and organized consent on the part of the workers.

By my statement of the problem I shall endeavor to show that the standard as above stated is a primary standard by which to judge all management.

The Efficient Shop.

Let us begin by getting clearly in our minds a picture of an efficient shop as we can easily construct it out of the principles laid down by Mr. Taylor and even out of the present attempts to apply those principles.

I shall picture this shop only in outline because you are all familiar with the details of the picture. I simply want to be sure that we do not lose the proportions of the main outlines in the particular interest which any one of us may have in certain particular aspects of the picture. In my description of this shop I shall, for the moment, ignore the human element entirely as it actually exists in the shop and describe the people handling the operations of which I shall speak as people who, whatever they may be outside the factory, are while in the factory simply animate machines, people who have either been trained or trained themselves, it matters not which for our present purpose, to do their work with all the precision of the most marvellous engine and with all the automatic delicacy and grace and perfect adaptation to environment of the poised bird on the wing.

In such a shop first of all we should find Mr. Taylor's principles applied to the financial and sales end of the organization. These applications I shall not pause to consider here (because, for simplicity's sake, we shall deal only with the strictly production problem) further than to point out that in any really efficient organization the high spots all along the line must be secured as to their efficiency before the more minute details are highly developed. A great deal of the scientific management in use at the present day, whether in sales, finance, production, or personnel, is similar to the situation in which a great deal of money might be spent in curing a person of flat foot who had some disease of the knee which might lead to amputation. This lack of co-ordination is an excellent illustration of one of the basic inefficiencies which penetrates the whole world today.

Assume, however, that the ideal shop we are picturing to ourselves has avoided these insults to common sense. It will on its production side proceed to organize every single one of its activities in relation to every other activity. That is the essence of the whole matter. That is the essence both of planning and of action in a shop. That is the essence of work analysis, of stores keeping, of the lay-out of equipment, of routing, of functionalizing and of costs flowing steadily and thirteen times a year into the profit and loss statement as a by-product of the management practice itself.

In such a process of organization all former standards are revalued, all precedents are fearlessly analyzed; no process which has been improved upon is retained a moment longer than is necessary smoothly to install the better process. The crafts and trades as we have known them are progressively broken up under this process; work is ever more and more specialized and the steady tendency throughout, because of the fact of this specialization, is to need at any particular point of any particular operation the thinking, judging human being less and less, so that the mechanically and easily-trained human being more and more is used, and more and more tends in his turn to give way to inanimate machinery. At the same time that this tendency is going on, the brain of the shop, as has been aptly said, is developing in the planning room until the shop is becoming as perfect an organization of relationships between brain and nerve and muscle as is the human body.

In itself all this is good and but the logical outcome of the introduction of machinery. It means lower unit costs and more wealth. Any force of society which attempts to turn back this progress, or halt, or even slow it up is contending with the inevitable. Such a factory as we have outlined is unquestionably the type of the major production method of the near future throughout the world under any form society may take.

Re-enter the Human Being.

So far we have no problem. But the moment that we substitute in the ideal factory which we have sketched the human being as he exists in the world today, we have our problem. People who have been no less pioneers and discoverers in the field of both general and social psychology than Mr. Taylor was in the mechanics of business organization, have found certain principles as basic as Mr. Taylor's and which spring from quite other roots. These equally fundamental principles center in this statement: the days of compulsion—the days of service without consent, are over. In tremendous areas compulsion still exists. We are still conscripted into the world. We are still in great areas of our lives the unconsulted objects of powerful forces. With all our magnificent engineering achievements and somewhat more slowly developing common sense, we are still individually and collectively the apparent sport of earthquake or lightning. When we have once decided to take passage on the sea, we have, so to speak, enslaved ourselves to the possible storms at sea. But in all those areas of life wherein man deals with man, great breaches have been made in the ranks of compulsion. We find, however slowly and haltingly, through the decades a steadily increasing assertion of the right both of the individual and of the individual in groups to give his consent to that which from any other human quarter it is desired him to do.

Consent from the point of view of life in the factory has two main types: individual consent and group consent.

As to individual consent, in some cases it is of the type of the traveler who decides to take ship, abandoning at the factory gate, as the other does at the dock, the right of being consulted by the management as the other does the right of being consulted by the captain. In other cases, continuous rights of consent are still retained.

As to group consent, it is of two kinds: the consent of the factory group by itself, and the consent of the factory group as a part of an inter-factory group.

The most casual study of the whole principle of consent will show that it always tends to strike its roots into wider and wider areas. It is the failure to recognize this principle, for example, which makes the present Rockefeller plan in Colorado a sociological joke and in the future, as in the past, likely to hold a sociological tragedy.

I think there will be little debate among any of us as to the general proposition that a free man—a consenting man—is the more desirable worker. Where we have broken down in imagination is in failing to realize that organized consent as well as individual consent is the basis of a more efficient group. We have been accustomed too much to think of democracy as almost necessarily a mere crude expression of untrained information through votes. Almost nothing has yet been attempted to build up a finer texture of democracy through self-training groups, constantly growing in strength through the consideration of scientifically accurate data.

Another error which we have lazily accepted as a failure of democracy is the idea of life as a fairly static thing. This error is clearest seen in the common statement that certain types of people, certain whole groups of people as well as certain individuals "are not worth any more." The reason they are not worth any more is largely because no adequate educational process has been tried. The theory is disproved by our immigrants when they are given the right chance. It is disproved in the tremendous progress the children in our schools make over the status of their parents. It is disproved above all by the absurd implication that human beings are less the field of the inventive organizer than machinery. More than any other one thing, life is an educational process and it is only when life is artificially restrained, artificially hampered, that, because the educational process is lacking, we wrongly think of life as static and of classes as efficiency castes.

The problem then is to combine, not through failure to come to grips and not through hostilities, but in constructively organized ways, the latest developments of efficiency in production with the latest developments of the science and art of democracy.

A primary standard then by which I should judge scientific management would be to consider whether or not the scientific manager and the student of social psychology, who, in shorter terms, might be called "the man of affairs," were jointly addressing themselves to the solution of this problem—the relation between efficiency and consent—in each particular industrial concern; and whether they were recognizing that the ultimate ideal will be the consent of the inter-factory group as the only one broad enough on which to build stable conditions of efficiency co-operatively with adequate safeguards to ensure that the human educational process shall not be turned back, stopped, or delayed any more than efficiency shall be turned back, stopped, or delayed. The educational problem is the fundamental problem of statesmanship and it is a minimum demand of that statesmanship that industry shall be a school of citizenship.

Conclusion.

Three points emerge clearly:

1. That craftsmanship in the old sense of the term is doomed.

2. That as craftsmanship can no longer furnish the base on which labor organization can grow, unionism, group action, will have to build itself up on a base as broad as the whole educative process itself instead of on the particular educative process of a particular craft. Even today the real strength of unionism is that unions are effective consumers' organizations with a primarily educational interest. As this fact gradually sifts through the minds of employers and managers they will gradually see that the most inefficient thing they can do is to fail to co-operate with such a great source of energy. The organizations of workers, on their side, can, when once that stand is taken, be counted on to consent to all that makes for efficiency. They will do this because in all legitimate enterprises—which are all enterprises where real service to the public is the test—the workers and the management will be equally concerned in perfecting the service. And at the same time, under constitutional industrial relations, they will contest the share in the management and the share of the product between themselves and with the consumer.

3. That the inter-relation of the forces we have outlined—the forces of efficiency and consent—is constantly taking place in the world today in all kinds of crude and unorganized ways. Here and there real elements of inter-organization between efficiency and consent appear. But for the most part the labor agreements in operation today are looked upon by employers as a necessary evil and by the workers as steps in their assertion of their rights as consumers and having little detailed relation to production processes. The beginnings of something far better than this are seen in the agreements in the garment trades wherein the manufacturers, the workers and the public are all represented as parties; and in certain kinds of organization which are being worked out in a few business concerns. There is still too little of real accomplishment in this direction to enable us to predicate with any certainty what the course of the development in details of organization will be by which efficiency and consent are made continuously revitalizing agents for each other.

Yet I believe that the point has been reached where it is profitable to attempt to gather together such experience as has been gained and relate it to the probable development of the next few decades.

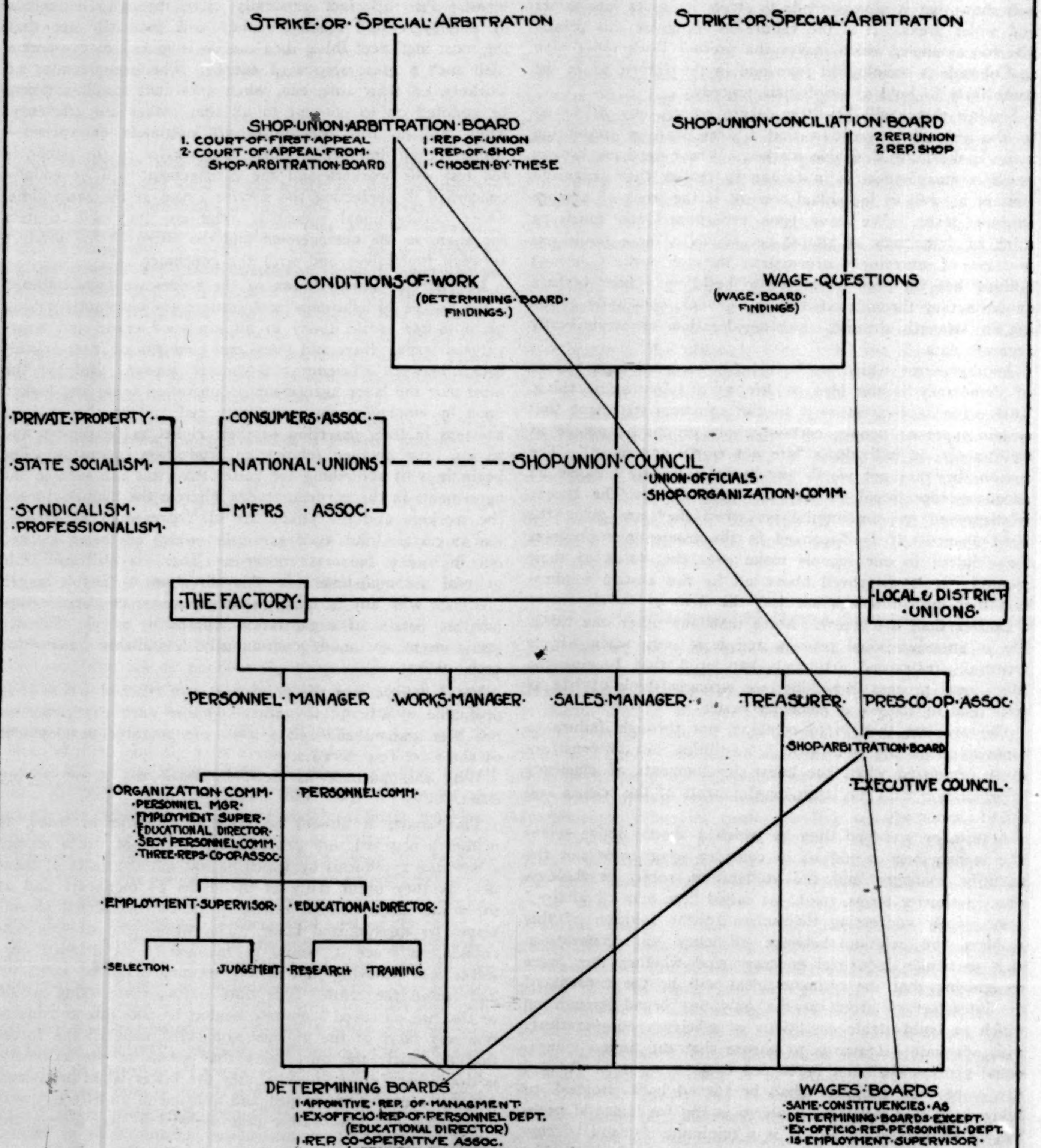
With this purpose in view, I submit the accompanying chart.

This chart, it should be constantly borne in mind, is neither a dogmatic nor propagandist document. It is merely a working hypothesis by which to test out the facts of business as they occur daily at the desks of managers and at the trade union council tables, or in the occasional assemblages of unorganized labor. The whole aim of this discussion, as I see it, would be falsified if we deluded ourselves into believing that in any seeming array of facts, we had found the truth. The only unforgivable thing would be that we, as social scientists, neglect to take into consideration any facts of the moment connected with all the forces that do exist; the only thing that seems to me axiomatic is that when forces do exist, they are better when organized, trained, educated, developed and enlisted in an effective way—anything you like—rather than allowed to play among and upon us blindly.

The picture of these forces submitted in this chart may be summarily commented on, as follows. In every form of factory there are human forces at work which, whether they are organized or not, are of at least equal importance with the forces governing sales, production, and finance. These forces take the two aspects of relationship to a grow-

POSSIBLE·RELATIONS·BETWEEN·FORCES·OF·EFFICIENCY·&·CONSENT

ROBERT·G·VALENTINE



ing intelligence on the part of the managers and a growing intelligence on the part of the employees.

Where these forces are organized they may take the form shown on the chart under the personnel heading at the left end of the factory line and under the co-operative association heading shown at the right end of the factory line. The relation between efficiency and consent is provided for, in the form of organization shown, through the relationship between the research department of the education division and the determining boards and wage boards. The research department is where plans of organization are worked out and where work analysis is done. The determining boards and wage boards, acting on the scientific facts put before them or the nearest approximation to such facts that can be obtained, sanction the findings in the name of the interests of all concerned.

The facts thus put by the research division before the determining boards and wage boards furnish the material for the whole structure of organization and become an inescapable factor at every debatable point. Thus, if appeal be taken from any findings of a determining board, or wage board, to the arbitration board shown on the chart, the case is necessarily considered in the light of the best available facts.

Related to the factory, sometimes by formal agreement and sometimes through the entirely unorganized relationships of its individual members, are the local and district unions, or even the mere incoherent thoughts and feelings of unorganized labor. As organization begins to take any shape at all, it begins to crystallize into some form of a shop-union council wherein the interests of the factory and of the local and district unions are to some extent formally organized. In such forms of organization as the garment trades, the shop union relationship has formally added to it the third relationship of the public.

The questions which come before such a shop-union council divide broadly into questions affecting the conditions of work and questions affecting pay. In the shop-union council's consideration of these questions, the findings of the determining boards and of the wage boards are before it so that here again the best available facts necessarily form the material of the discussion.

As to conditions of work, experience so far tends to show that all questions are arbitrable; namely, they are capable of being decided by an impartial third party on the basis of the facts presented.

Questions of pay, on the other hand, are still so unsupported by scientific basic facts as to be a matter of conciliation rather than of arbitration.

It will be seen in the chart that appeal lies from the shop arbitration board to either the shop union arbitration board or the shop union conciliation board.

At this point, it should be emphasized again that nothing on this chart indicates anything artificial in organization. The attempts that are going on, so far as the chart expresses them, are attempts to strengthen and make saner and sounder the organization of untamed forces which do exist.

This point should equally be borne in mind in the relation of the shop-union council as depicted on the chart to those natural forces which exist in society at large in a more or less unorganized state; namely, consumers' control, whether private or public, the national and international labor unions and manufacturers' associations. These present day forces of social and industrial organization are in their turn more or less crude expressions of three underlying forces shown to us by social psychology, which will in all probability work out between them the society of the future. These three basic drifts appear to be:

1. The fundamental soundness of the principle of private property. This element takes into account the fact that it is a basic instinct of human nature for the individual to desire possession.

2. The force of state socialism. This force takes into consideration the fact that it is equally a basic instinct of human nature to desire to work out things in concert with one's fellows. An excellent example of state socialism at present in practice is the public school system.

3. The force of syndicalism. This force takes into consideration that basic instinct of human nature which leads us to desire to share in the control of the methods of production which we are concerned in and in distribution of the product. An excellent example of this instinct in present day practice is supplied by the whole field of professionalism as seen concretely in medical societies and bar associations.

Such a study as we have outlined here of the forces at work in the world and of our duty to attempt to organize them exactly as the student of electricity has organized that force, makes it the job of the industrial statesman to recognize first of all that there are facts of democracy as well as facts of efficiency, and to see to it, so far as it is humanly possible, that each group of facts is related to the other in organized and efficient ways.

Applied scientific management, then, which does not relate its science to the desires and to the thoughts of all connected with a concern in all their relations, either organized or in process of organizing, is not true to the Taylor principles.

THE PROGRESSIVE RELATION BETWEEN EFFICIENCY AND CONSENT[1]

By Robert G. Valentine

Inasmuch as you have read and have with you for reference the advance abstract of my address, I propose to assume your knowledge of that and make my discussion a development of the advance abstract.

I believe a society like the Society to Promote the Science of Management should have a planning department which should provide for adequate investigation of two great classes of problems which confront its individual members, whether proprietors, managers or management engineers. These two classes of problems are:

1. Those relating to the determination of the best form of organization, the best way of performing an operation, etc., under a given set of conditions. These investigations must be conducted by competent persons and by the method of scientific experiment.

2. Those relating to the social, industrial and moral effects of putting into operation the organization or methods which scientific investigation has determined to be technically the best, and relating to the conditions resulting from public opinion concerning industrial relations, under which they shall be put into effect, and the machinery by which they shall be put into effect. Investigation of this class of problems cannot be conducted in the same manner as investigation of the other class of problems. It involves, for instance, a study of growing opinion concerning industrial democracy, the real meaning of property rights, the rights of labor and the functions of labor unions, whether labor is merely a commodity, and so on. It involves, further, an

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[1] An abstract of stenographer's report of the address at the New York meeting, Friday evening, December 10, 1915.

inquiry concerning what influence developing opinion on these and many other things should and undoubtedly will have on the individual's conduct of his business, including putting into effect the best technical methods he may have discovered. I believe every day many people are coming to believe, and, what is practically of great importance to you, labor believes (and has the power to make its beliefs receive due consideration), that the worker, individually and in organized groups, has a right to share in the determination whether and under what conditions new technical methods and apparatus shall be put into use. That is what I mean by the relation between efficiency and consent. I bring what help I can to your investigation of this second class of problems.

I wish to emphasize that, in investigating this second class of problems, your Society must not fail to study, and to ponder deeply, growing opinion concerning the rights and responsibilities of all persons, individually and in groups, who constitute industrial society. I take the liberty of suggesting the following specific subjects of enquiry.

1. The meaning of democracy; industrial democracy; class representation; ownership; property; efficiency; consent; etc.

2. Labor unions; their ideals and aims, and the positive good they have accomplished.

With respect to study of these things, I recommend the following: Sidney and Beatrice Webb, "Industrial Democracy," Part II, chs. 12 and 13,—Part III, chs. 1, 3 and 4; Helen Marat, "American Trade Unions"; Graham Wallas, "The Great Society", last three chapters; G. D. H. Cole, "The World of Labor", particularly chs. 10 to 14 inclusive; Sidney and Beatrice Webb, "What Syndicalism Means"; and finally, an article on "A New Province of Law and Order", by Justice Higgins, of the High Court of Australia, in a recent number of the *Harvard Law Review*.

3. The meaning and significance of consumer's efficiency. The consumption of goods is not a minor thing whose function is to give you the occasion to produce. The fact is just the reverse: your part is secondary. You produce merely to meet the requirements of the important thing, consumption—welfare. The workman is not merely a tool of production, a means to an end. You and the workman together, as producers, are but means to an end, the end being the welfare of the workmen and yourselves as consumers. A producing organization is a consumer's agent. The efficiency of the workmen and yourselves as consumers is the important efficiency, and that efficiency is the basis of producer's efficiency.

Now labor unions think in terms of consumer's efficiency while managers think in terms of producer's efficiency. Their minds do not meet. The labor problem is primarily a problem of consumption, of distribution, rather than of production. Managers too frequently think of it as a problem of production.

4. The great mass of unorganized forces which are present in every industrial institution, forces the existence of which is not recognized by many managers because the forces are unorganized. These forces—the rights, the desires, the opinions, etc., of the workmen—surely exist in every plant, even though they are not organized. The wise manager should recognize and organize them and make them agencies of co-operation in the conduct of his plant. Instead he too frequently struggles, now with one, now with another, without perceiving this existence as a related whole. The struggle with one cannot be permanently terminated without taking all into consideration. In the chart which accompanied the preliminary abstract of this address, I attempted to suggest a machinery of contact between workmen and management which recognizes these forces and organizes and gives expression to them. This machinery is not an artificial inflexible thing. In any plant it would take a form determined by the combination of forces present. It would differ greatly in different industries, in different plants of the same industry and in a given plant at different times.

In studing this chart you should begin with the rectangle representing THE FACTORY, to the left of the page, nearly midway between top and bottom. Below you will find represented co-ordinate departments of the factory. The works, sales and financial departments are found in all business organizations. The personnel department, as a distinct functionalized department, is found in the exceptional plant only; and the Co-operative Association, in the form I have indicated—as a co-ordinate department made up of the whole personnel of the business—is a still rarer institution. This department gathers together, organizes and gives expression to the mass of unorganized forces to which I have referred—the rights, desires, opinions, etc., of the working forces.

The personnel department alone to my mind hardly gets at the heart of the problem; it does not get very far away from autocracy in industry. The co-operative department introduces a new and fundamental kind of democracy in industry.

In the personnel department on the chart you will find several subsidiary organizations such as the organization committee, on which are representatives of the Co-operative Association. It is through such machinery as is represented by these committees that questions of the conduct of the business which affect the employee,—working conditions and methods, hours, wages, etc., can be threshed out. If the research or experiment department has decided that a certain job should be done in a certain manner, it can go before a properly organized board who give their consent to it, so that when it comes to the work people, it goes through smoothly, more smoothly than if it were put up to them as an entirely fresh proposition. There will have been recognized their right to be consulted about, and to consent to, a proposition which affects them—which affects their consumers' as well as producers' efficiency.

5. All the subjects of investigation suggested above lead to the final and most important subject of investigation, the consent of the worker to that which affects him. I believe that the utilization of every production methods or mechanism should be conditioned on the consent of those interested parties: (1) the management or owners, (2) the individual employee affected, (3) the group of employees directly or indirectly affected. I am not talking about the workman's consent to the experiments which determine the best method of doing a particular thing; I am talking about the workman's consent to putting that best method into use through him. In the laboratory it may have been demonstrated by anyone you choose that the new method is technically, as a production process, the most efficient, but has not the workman the right to a judgment whether it is most efficient from the viewpoint of his consumer's efficiency?

I go so far as to believe that the individual workman affected and organizations representing every group of workmen affected, within or without the plant, should give consent to the putting into effect of even the most minute new mechanism or methods.

What is the importance of the study of the relation between efficiency and consent to the practical business man?

To discover the industrial conditions of the application of a new method is as practical and important a matter as to discover the new method. Big ideas concerning industrial democracy—real industrial democracy—are in the air and are crystallizing. They are each year defining anew the conditions to industrial operations. The practical business man is he who marches with progress, and is not taken unawares by unforeseen conditions. There are two equally practical ways of keeping step with progress. One is by each day taking the best one finds and moulding and adding to or taking from and building on, by small increments. But he who follows this method only usually lags considerably. The other is by continual analysis of the whole industrial environment in the search for signs of the direction of progress. He who does this anticipates his competitors, secures advantages and is the wiser and more practical man.

DISCUSSION

Mr. Robert B. Wolf:[1] I cannot agree with Mr. Valentine's first classification of scientific management into two forms.

> Beneficial and Dangerous.
> If it is dangerous it is *not*
> Scientific Management.

I disagree with him also, when he classes as scientific the type of management which permits a man to gradually develop into an animated machine.

An organization to be truly scientific must of course, as Mr. Valentine points out, "organize every single one of its activities in relation to every other activity, otherwise no unity of action can be procured". When, however, he states (and I quote in part his own words):

> "The steady tendency throughout, because of the fact of this specialization is to need at any particular point of any particular operation, the thinking, judging human beings less and less, so that the mechanically and easily trained human being more and more is used, and more and more tends in his turn to give way to inanimate machinery. At the same time that this tendency is going on the brain of the shop, as has been aptly said, is developing in the planning room until the shop is becoming as perfect an organization of relationships between brain and nerve and muscle as is the human body".
> And when he further states:
> "That in itself all this is good and but the logical outcome of the introduction of machinery because it means lower unit cost and more wealth and that any force of society which attempts to turn back this or halt or even slow it up, is contending with the inevitable."

Then I disagree with him absolutely. The brain of the plant will of course be built up, but the purpose of this brain is to establish unity of action upon the part of the organization and not to relieve the man of his own reasoning powers.

The organization brain, or memory, should enable the organization as a whole to utilize the individual brains of its employees and should stimulate them to greater mental effort.

There is a deplorable tendency on the part of some of the men who mistakenly believe themselves to be Mr. Taylor's followers to have the central planning department do all the thinking for the organization and I hope that the power of this society will be directed against this tendency, for it is a thoroughly unscientific procedure. The doctrine that any scientific method that increases productivity is scientific management is absolutely erroneous.

Lower unit costs do not mean more wealth when these costs are obtained by sacrificing the mentality of the employee.

Last May, in Boston, I read a paper on "Individuality in Industry" in which I attempted to show how organization individuality could be built up by consciously applying to our plants the organizing principle which holds man's infinitely complex physical body together, causing it to act as a single creative unit, but I called attention to the fact that this could only be done efficiently by developing simultaneously the individuality of the employee. This, of course, is an educational process and means a development of his brain power.

The fact that we have taken from the individual man the opportunity to create a finished article (as in the shoe industry for example) and transferred this privilege to the manufacturing organization, is not reason for robbing him of the opportunity to use his creative powers. No matter how efficient an organization can become, it can never even approach the efficiency of man as an instrument for specializing the generic or natural laws.

Individuality is the necessary complement of all creative activity because the universal life-giving principle cannot deal with a particular situation except through an individual and to build an organization upon the principle that an instrument that has been millions of years in evolving to self consciousness can be robbed of its power to create is extremely unscientific to say the least. Real Scientific Management does *not* make this blunder.

Just a word in conclusion; my own experience has indicated that 90% or more of the manufacturing operations which tend to make men animated machines, can be made interesting. (I quote from my former paper) "By giving each individual a record of the performance of his work and by making comparisons with others............. This new order carried out to its ultimate point means that each man in the organization is interested because those above him have had brains enough to furnish him with a means of recording his progress. He then feels that he is creating something and is happy". Please bear in mind that this is no abstract theory but something we are actually doing in hundreds of ways in our own plant daily.

Those operations which cannot be made interesting to men, and which do not offer an opportunity to gratify the fundamental creative desire for self expression, must be eliminated from our industries and the sooner we build a philosophy of management upon this basis the sooner will the present destructive social and industrial unrest be replaced by a constructive condition tending towards the true democracy—a democracy which is based upon a recognition of the true value of leadership and a willingness to be led by those whose main desire in life is to be of service to their fellow men.

We *employers*, must, as Mr. Valentine points out, take all of the various factors into account and co-operate with and obtain the consent of all of these groups. We must not, however, lose sight of the fact that it was our own selfishness, before we were enlightened by Scientific Management, that brought them into existence and we alone are to blame for their present inefficiency. Education is the only cure and this must include the opportunity for self expression, for unless we can put our theories into practice, our learning is of little consequence.

Craftsmanship in the old sense is doomed, but it must not be replaced by something less vital, but by a craft which will require a greater degree of intelligence, because it is based upon truly educational lines.

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[1] Manager of Manufacturing, Burgess Sulphite Fibre Co., Berlin, N.H.

The only Scientific Management I recognize does get the consent of the employee individually and collectively, not consent, however, to rob him of his reason and retard his growth, but consent to be helped to a fuller knowledge of how to unfold his latent powers.

Mr. Richard A. Feiss:[1] This question that Mr. Valentine has brought up is a very vital question. I believe in the principle back of Mr. Valentine's theories but I believe where Mr. Valentine has made his mistake is in trying to apply a theory that will fit certain conditions when those conditions no longer exist.

As I understand Mr. Valentine, his idea is that employees generally, not only in their own plants, but also as represented by unions or other organizations, should have a part in the administration of business, in all its executive activities when applied specifically to any one thing, no matter how small. This he feels is necessary to true democracy.

What true democracy really is he has been unable satisfactorily to define. I believe we will all agree with Mr. Valentine that it involves at least the inherent right of all the people to have in *some* form a great deal to say with respect to the actual conditions under which they work and live. Two other things I consider necessary to true democracy: A free channel of expression and unhampered opportunity. If the people have these fundamentals, it seems to me that the particular form which an organization takes is of comparatively small importance. It has been my observation that nowhere can a man succeed in putting across a particular method of management or anything else affecting the people in an organization unless he has the people affected absolutely with him.

I gravely doubt the ability or the right of the employees in general, to participate in questions requiring expert opinion, scientific determination or purely executive action. Authority in such matters is tied up with responsibility and those who have not the responsibility have no right to the authority. If a man or a group of men or women are fitted to carry on actual executive administration, I say it is a shame to keep them at machines. They ought to be in the managing end of the business. We, and I believe every one else, are in need of this kind of people. The great difficulty is that most people, including managers, are neither fitted nor willing to assume responsibility. There are several sides to administration,—executive, legislative and the analysis and codification of facts and of working rules. On this last side there are a great many things not subject to opinion or arbitration on the part of either employer or employee.

In our plant, we believe we have a great deal of real democracy though perhaps not expressing itself in just the form of which some people might approve. The substance, however, is there. If we have a group of ten men doing the same work, we certainly would consult them on anything affecting them as a group, but we would not consult the rest of the men in the plant or groups on similar work in other plants and in other cities. This is most impracticable and so far-fetched and indirect that it would not be of interest to the men themselves, even though "indirectly affected." Mr. Valentine claims that everybody, directly or indirectly affected, should have a say. But how? Surely this is possible only through representatives and there we come to one of the weaknesses in representative government,—the men themselves do not actually have the say. These things are handled for them by so-called representatives often in self-perpetuating positions and perhaps hundreds of miles away and these representatives are subject to limitatious motives just as selfish as those of the men on the job doing the work at the machines, or the work of management.

It seems to me that Mr. Valentine's arguments have not been confined to conditions as they exist. Both the unions and the managers have their good sides and their bad sides. I am not going to pretend to say which has more or less because that depends on the kind of men they happen to be. There are better and worse unions and better and worse managers. None of them are perfect. Yet in these discussions between the unions and scientific management, the union has been held up in its ideal form (which to my mind does not and never will exist) and scientific management is criticised from the side of actual practise as it is being worked out in the hands of people who are trying to do their best but are only mortal and make mistakes. If we are going to get anywhere, I should say,—Let us take unions as they are and management as it is, or let us take unions in their ideal form and scientific management in its ideal form. It is absolutely unfair to take unions in their ideal form and management only as it is.

In our plant, we have gone on the basis that democracy and coöperation are almost synonymous and every fellow is working for his interest through the knowledge of his duty to the other man and through the knowledge that his interests are ethically and practically served only by serving all the interests of everybody else. On the other hand, when each man feels that he has his own individual selfish right above all others, it seems to me we approach anarchy and that men like Mr. Valentine very often, unintentionally, I believe, confuse anarchy with democracy.

I can see some reason in Mr. Valentine's statement about Mr. Taylor's works not having been finished. After reading Mr. Taylor's works three or four times, my first impression was something like that of Mr. Valentine, but I found that my comprehension was not big enough to grasp the real meaning back of Mr. Taylor's words. Mr. Taylor's thoughts are so deep that I only began to understand a few paragraphs after I spent three consecutive days with him personally and went over things with him. When Mr. Taylor came to Cleveland he told me the thing that impressed him as he came into the city was the inscription on the court house—"Obedience to the Law is Liberty." That seems to me the opposite of anarchy. The idea is that you and I instead of being subservient to each other's will are subservient to laws that govern both of us and those laws are not expressed through one particular kind of channel but in a multitude of ways. If we recognize human rights, *i. e.* the rights of another fellow *as* another fellow,—we are nearer to democracy than by handing over the care of these rights to some representative who may abuse them. The weakness of political democracy is that you and I and thousands of others must hand over the expression of our thoughts to someone else who can never really represent us. No doubt this is the best we can do under conditions so cumbrous. This political form of democracy, however, does not necessarily apply to the shop. To my mind, no shop can be successful where it gets beyond the possibility of personal contact.

Democracy, whether it exists or not, is more or less comparative, but nevertheless, it is not a question of form. The real fault that I have to find with Mr. Valentine is that he does not go far enough in his ideas of the possibility of actual democracy in industry. When I was first given the responsibility of management it was not uncommon for committees to come in and see me. Now, our people feel that they are so close to participation in the administration of our business when it directly affects them that they won't permit any committee• to represent them. They would not permit any foreman to represent them. They are on the job themselves and they come to us personally. The more informal it is the more democratic to my mind. I feel that the proper administration of my position is secured, not so much through what I have learned from my people as because the expression of public opinion is so informal, so natural and so direct that our people won't permit us to do anything wrong.

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This seems to me to be democracy in fact, expressed in one of many possible forms. My point is that democracy is not a question of form, but a question of fact.

MR. SANFORD E. THOMPSON:[1] It is the tendency of the age for the people to take greater and more intimate share in government. However we may feel on the subject, this same tendency in industry must be faced, and Mr. Valentine is to be thanked for bringing the subject before our society. I know Mr. Valentine more intimately than many of you and I appreciate his practical accomplishments in connection with both employees and employers. I believe that we all should consider seriously certain of his general principles and that the presentation of this paper will lead to further reading and study on this vital side of the management question. At the same time a careful consideration of the views brought out in this discussion should assist Mr. Valentine in his treatment of industrial problems.

I would accept two general propositions: first, no management is truly scientific unless the human mechanism in the establishment is working smoothly and without appreciable friction. This means that the workers as a whole must be satisfied with their condition of work and wages, and further that they must be really interested in their work. Second, continuous right of consent of every individual should be conceded by the management both as regards methods and machinery. The closing paragraph of the paper becomes even more vital and infinitely broader if we omit seven little words and make it read, "applied scientific management, then, which does not relate its science to the desires and to the thoughts of all connected with a concern in all their relations. . . . . . is not true to the Taylor principle." This principle cannot be emphasized too strongly.

As I read the paper, Mr. Valentine starts in with the assumption that scientific management, and in fact all management, is to be judged by the standard as to whether it involves not merely individual but organized consent. It is here that we disagree. At the same time I see no objection to organized consent, and in certain cases, even with scientific management methods, organized consent may be essential. The range, however, may be all the way from a plant where the best results are obtained simply by personal contact, with no organization whatever, up to the plant where definite organizations are inevitable among the employees. The methods must be adapted to suit the conditions.

The extent to which the "consent" should go, to use Mr. Valentine's term, depends in my opinion first, upon the type of the plant, *i. e.,* its size, character of industry, relation to the public, relation to organized labor, etc.; second, upon the character of the consent to be expected and when and how it is to be exercised. The fundamental limitations to interfactory decisions or detail problems lie in the basic principles of scientific management. First, the organization must be functional; and second, decisions must be based on fact, not on opinion. Functional organization requires not only that each foreman must have a distinct well-thought out duty to do, but that every man and woman in the plant must have a specific duty. The production man then supervises the production and his authority in this one field is greater than that of the superintendent; the rate fixer and not the superintendent nor the worker determines the standard job. Every feature of scientific management must be decided not by opinion, but by a complete study of each individual operation. Just as soon as opinion is substituted for fact we have not scientific management. However, before any method is put in operation it must be discussed with the individuals affected; one must get points from them and find out whether the methods or arrangements are satisfactory to them. I fail to see how the advice or consent of other departments of a plant can be of use or value. I cannot see how a girl making paper boxes in a plant has reason or right to pass on any phase of the operation of punching holes in paper. After a certain operation is under way, you may have your group consent, or if you want, you can go further and have your factory consent. I recognize the right of every man and woman in the establishment to discuss methods and to object to conditions. I recognize the right to organize,—to organize and to fight. I believe that every man who introduces a new method of work in a shop should obtain the consent of the operative with whom he starts and of the other operatives who are started subsequently. If he does not do this the operatives have a perfect right to object and to resist. The operatives further should have perfect freedom in expressing objections at any time. I can conceive further that a judicial body consisting of representatives of the management and of the employees might pass upon certain matters in dispute after having the facts definitely presented.

We may say, then, that we should have always, first, individual consent; also, second, we should have group consent. I mean by this the consent of the group doing each particular piece of work. In certain fundamentals we should have factory consent, either in the line of Mr. Feiss's argument or in other shapes and more clearly defined. Inter-factory consent may be necessary in unscientifically managed plants. If a shop is not scientifically organized; that is, if tasks and rates are set by averages and not by exact study; if standards are superficial; if wages and rates are not gauged by the conditions in a particular establishment, but are superficially assumed to be the same in all establishments; then there may be just reason for submitting questions and obtaining decisions from interfactory sources. This is just where scientific management differentiates itself from unscientific management. If the management is scientific, it fits its conclusions to the individual shop. Unless and until the other shops are similarly standardized, and then, unless all matters treated are strictly on the same plane in the different shops, inter-factory action must tend to make for friction instead of for coöperation. Let us hope that the continued development, both among the men whose function it is to manage and among the men whose function it is to execute, of the ethical spirit and principles, the spirit of fairness, the spirit of justice, of real friendship, and the extension of the personal relation may still further simplify and avoid complications of too extensive organization, while at this same time developing the character and the capacity of the individual.

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[1] Consulting Engineer, Newton Highlands, Mass.

Mr. John A. Fitch[1]: There are two things involved in the discussion about which we need to do some very careful thinking, for if we are not right on the fundamentals, the rest of our thinking is apt to be invalid. The first is, the exact economic relations that exist between employer and employee. It is absolutely essential that we make up our minds as to what that is before we begin to discuss the details of the relationship.

It is an absolutely fundamental proposition that the interests of employer and employee, or capital and labor if you prefer, are opposed. That statement is, of course, subject to modification. If there should be no production there would be neither profits nor wages; therefore it is to the interest of both employer and employee that there be production. So far their interests are harmonious and it ought to be possible to work out a basis for harmonious action. But when it comes to dividing up the profits, the money paid in for the thing produced, and deciding how much of that shall go to wages and how much to the employer or to capital, there arises a fundamental difference of opinion, which, so long as the present economic order exists I see no possibility of ever smoothing out. There may be amicable agreements at different times, but the question will always recur just so long as men are human and want more goods.

As a result of that, employers and employees are both, at times, likely to act pretty cranky from the other fellow's point of view. One reason why unions do not appreciate the significance of scientific management, and have so far been unwilling to accept its more obvious truths, is that they feel that the proponents of scientific management have not fully taken into account the existence of this fundamental opposition. Representatives of scientific management are apt to say that there are underlying laws so scientific and true that, once recognized, the relationship can be worked out upon the basis of those laws. I grant that that may be true with regard to many things, but just so long as no man in this room or in the world can give a definition of justice which we will all accept, just so long will it prove impossible to set up a scientific principle for dividing profits, the returns to industry. Over that there is going to be difference of opinion and struggle. As a result of that fundamental difference the same man will have a different attitude toward the same problem according to whether he is an employer or an employee. He may be an employer today and employee tomorrow, and in each relation he will have a different attitude.

If I were an employer of labor I should want my shop to be efficient. I should expect it to be more efficient if I had the say in regard to everything. It would be, from my point of view. I should not want a union. But I know that equally if I were an employee in a shop, possessing exactly the same knowledge of the situation that I have when I make the other statement, with exactly the same faculties that I have now, not only would I want a union, but I would become an agitator for one. I would not be happy until I got it, because it is a fundamental principle that I could not trust the employer to pay me all the wages that I want. Similarly, the employer could not trust me to leave him in possession of all the authority and all the income he wants.

Of course I am neither employer or employee in that sense. I am part of the public, and therefore I believe heartily what Mr. Valentine has said about consent, and I think there must be organized consent. Otherwise, you whose fine training and brains are devoted to management, will at times in the absorption of that problem forget the human element involved. Experience demonstrates the fact that you cannot, of a dead certainty, be trusted to be fair to a large number of employees.

The other fundamental proposition which needs to receive consideration is this question of democracy. Democracy, reverting to its derivation means the rule of the people. There is no pure democracy anywhere, but a certain kind of democracy can be worked out. I should not think it would be necessary to have a referendum over the minute details of shop management. We believe in political democracy, and endeavor to make it as complete as possible. But we all get together and decide just how many fishes shall be allowed to swim in the streams and lakes of the Adirondacks, or how to conserve the forest reserve, or what material to use in the building of roads. We delegate such things, but that does not destroy our democracy for we have the power to elect new delegates. It seems to me equally consistent to have representation regarding fundamental things in shop management. I can conceive of such a democracy in the shop voting to allow one man to decide arbitrarily on points of detail.

But the fundamental point about democracy that I want to bring out is that it is not particularly efficient or economical in the sense in which those terms are ordinarily used. Here I may differ somewhat from Mr. Valentine. Mr. Valentine has said: "The organization of workers on their side can, when once that stand is taken, (that is, the willingness to co-operate,) be counted on to consent to all that makes for efficiency." I believe that statement may well be doubted. Probably the most efficient type of government is an absolute despotism. So the most efficient shop is one where the employer can make rules that will never be questioned. In politics we have discovered, however, that the efficiency of a despot is apt to be different from what is efficient for a people. Labor has discovered that same thing in shop government. The efficiency of maximum production is not always co-existent with the efficiency of health and happiness. Democracy in industry may impair certain kinds of efficiency, therefore, just as it has in society at large. But it is sure to create other and higher values.

Mr. Walter N. Polakov[1]: In his attempt to reconcile the methods of increasing the productive efficiency with the consent of the workman, Mr. Valentine ignores the very basis of our economic form of society. It is not the opinion of the individual workman or of workmen's societies, but of the class of wage earners, of the proletariat that we have to take into account. Modern society economically is composed of two classes, those who produce and those who give them facilities to produce, of owners of physical and mental energy to be sold for a living and owners of means of production such as natural resources, machinery and capital. The interests of these two classes of our society are diametrically opposite. Wage earners want to sell their labor at as high a price as they can force the employer to give them. The employers want to sell the commodities produced by workmen for as high a price as they can get. Consumers as an economic class do not exist. They belong to both classes. Numerically, however, the working class is not only to secure high wages, as this automatically raises the prices of commodities they produce, but also to reduce or at least stop the increased cost of commodities, that is, cost of living, which at present and in the past always increased in advance of and as a rule faster than the wages.

The working class through their world-famous spokesmen scientifically analyzed these aims of the working class and little if anything remains to be said after the works of

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[1] Editorial Staff, "The Survey," New York City.

[1] Consulting Engineer, New York City.

Carl Marx, Friedrich Engels, August Bebel and others were published.

Quoting from A. Bebel's "Woman under Socialism," "The working class does welcome advance of science as applied to industries inasmuch as with the increased speed of production made thereby possible, it is possible to reduce working hours to eight, six or even four per day, giving more time for education, for home life and for social activities." Here we have the consent to increase the productive efficiency and this consent comes not from casual association of individual workmen with demagogic politicians, but from the class conscious, scientifically founded party that does represent the interests of the working class.

Mr. William Kent[1]: In the introductory portion of his paper Mr. Valentine pronounces a distinctly favorable judgment upon the principles of Scientific Management as described and as applied by Mr. Taylor and his friends. He says, "The actual methods of applying the principles at those plants furnish us with the basis for the belief that the principles stated by Mr. Taylor furnish the latest word in the progress of the mechanics of industry."

He also says, "Mr. Taylor's contributions to the industrial world will gradually prove themselves to be among the major contributions to human progress."

Mr. Valentine here not only asserts his belief in the Taylor principles, but he indicates clearly the standard by which he judges them; that standard is the common sense one, the results that have been accomplished by their application.

Having gone thus far he seems to abandon the standard upon which he based his judgment and to look for a new standard, namely, "The standard by which to judge is to ascertain whether any particular application of the principles involves the recognition of a truly independent and organized consent on the part of the workers." It would naturally be expected that Mr. Valentine would proceed to apply this "standard by which to judge" and pronounce a new judgment, and it might also be expected that having found that no scientific manager has ever recognized that ideal, his new judgment of scientific management would be unfavorable, and directly opposite to the judgment he had originally expressed. But as far as appears in the paper, he makes no application of his new standard. He leaves the standard hanging in the air and proceeds to discuss a lot of entirely different subjects. There are no facts or statistics in the paper tending to show that the "standard by which to judge all management" has any basis other than an imaginary one; nothing to show why he considers that the Rockefeller plan in Colorad is a "sociological joke," or that "craftsmanship is doomed."

Mr. Miner Chipman[2]: Mr. Valentine says that "consent from the point of view of life in the factory has two main types: individual consent and group consent." The word "consent" requires further analysis. Consent is of two kinds, first, consent given through confidence, and second, consent based upon persuasion.

Consent based upon confidence is not established through discussion, arbitration or conciliation. A man consents to go upon an operating table, and gives himself up to an operation, the technique of which he knows nothing and cares less. He has confidence in the technique and skill of the surgeon. Consent is the result of confidence in the technique of an expert. This type of consent is quite different from the consent defined by Mr. Valentine as the antithesis of compulsion. Consent through confidence has developed with the evolution of scientific method. The measurement of civilization is found in this type of consent and from the viewpoint of social progress is of more importance than consent as the antithesis of compulsion. Insofar as the technique of the science is concerned, the physician, the surgeon, the engineer, are all arbitrary and dictatorial. Science never went begging for consent, and yet we obey the physician, the surgeon, the engineer, without any sense of compulsion.

Making this distinction in the meaning of the word "consent," I believe we can look upon Mr. Taylor's life and work in the proper light. Mr. Taylor was essentially a man of science. Scientific management was to him what the practice of medicine is to the physician. Mr. Valentine infers that Mr. Taylor overlooked the principle of consent, and makes apology for his method of expression and regrets the impression at times created by his writings.

I am not sure that any apology is required for the conceptions held by Frederick W. Taylor in relation to the problem of consent. He did not seek the type of consent defined by Mr. Valentine. As a man of science he sought for confidence in the technique of the science of management, and with that confidence established, consent of an enduring type would follow. Mr. Taylor was wise enough to keep politics out of scientific management.

Mr. Taylor aimed to provide the managers of industrial plants with a scientific technique of administration and operation. That he accomplished this end, no one will deny. Mr. Valentine's criticism of Mr. Taylor's work is typical of all the criticism coming from those who have failed to recognize the truly scientific nature of his undertaking.

The Time-study of Mr. Taylor is the diagnosis of an industrial operation. According to Mr. Taylor's principles it is as scientific as the Nautical Almanac. What would be the value of either the time-study or the almanac if the data, in case of dispute, were submitted to a disinterested third party for arbitration, adjustment or conciliation? The consent of a Taylor time-study cannot be arbitrated any more than the report of a chemist. The schedules of the planning room, if made in accordance with Taylor principles, are not open to arbitration. The consent of the shop to submit to the standards imposed and the plans presented, depends upon the *confidence* of the organization in the principles and practice of the science.

I deny that Mr. Taylor did not conceive of the element of consent. The consent he had in mind, however, was not, and could not be, the consent that Mr. Valentine puts forward as essential. Mr. Taylor's conception of consent was scientific in nature, and vital to the realization of his principles in their purity; Mr. Valentine's conception of consent is utterly opposed to scientific method and would prove fatal to the whole structure.

Scientific management, considered in its essence and in its purity, has nothing to do with the consent of labor as it is organized today. Organized labor exists largely because of the lack of scientific management. It thrives on the absence of the thing Mr. Taylor aimed to introduce.

As labor is organized today, is it fitted to undertake the functions Mr. Valentine proposed to impose upon it?

Mr. Valentine apparently assumes that organized labor is a democratic body, but he does not prove it. I question it from personal experience. I say that the Dietrick amendment to the Army Appropriation bill is a notable example. The amendment to the Army Appropriation bill does not represent the real will of the worker. I happen to know that the real opinion of the worker was not ascertained, their consent to the program was wanting, and a ring of political tricksters put it over on the government, on scientific management, and upon the workers. It was a case where we were forcibly reminded that "there are facts of democracy as well as facts of efficiency."

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Frederick W. Taylor, in my opinion, had a very clearly defined conception of this element of "consent." Consent upon the part of the employer and the practical old time manager was first in order, and twenty-five years of education, training and organization has not entirely achieved it. Progress has been made, however, and principles which would have been the subject of discussion a few years ago are now matters of common acceptance. The element of consent has been evolving. From personal experience I know that it has been evolving in the minds of the worker as well. This consent, however, has been born of a confidence in the principles of scientific management, as a science, and not as a political football.

Mr. Valentine condemns the Rockefeller plan in Colorado as a sociological joke and says it may prove to be a sociological tragedy. It seems to be a sociological joke because it was practical. It was worked out where the coal miner, as an individual, sat face to face with the man from 26 Broadway. They met as men together. I care not how long that agreement may last, it is a demonstration that employer and employee can get together, and agree, without the sanction of an international union.

In conclusion I deny that the principles of scientific management do not contain the principle of consent. That principle is there, and consent has been slowly evolving. It is a consent based upon the principles of scientific management in all their purity, in their very essence.

If we, in our lifetime, cannot realize the fullest statement of consent, we shall pass the good work on, knowing that in the end scientific management will receive the confidence and consent essential to the permanent progress of any science.

Mr. H. K. Hathaway[1]: From Mr. Valentine's definitions of Scientific Management, and statements concerning Mr. Taylor, I think he has not sufficiently familiarized himself with Mr. Taylor's conceptions of scientific management and its present application;—much less as to its value and application in the future. And when Mr. Valentine says, "The standard by which to judge is to ascertain whether any particular application of the principles involves a recognition of a truly independent and organized consent on the part of the workers," I feel we need a very much better definition as to what consent is. I do not think that is at all an adequate definition as to what consent is. I do not think that is at all an adequate standard upon which to judge whether scientific management is true or not.

It seems to me that consent and responsibility are at least of equal importance. In the plan outlined by Mr. Valentine we have certain boards, shop councils and one thing and another, finally boiling down to a determining board upon which there is only one out of five who is in any sense directly responsible for perpetuating the business. Any man who has had to run a business, who has had to make sure that he was going to have money in the bank to meet his pay roll from week to week would object to appearing on a board of five if he had no more power than each of the four others who were absolutely without responsibility in that respect.

Mr. Valentine shows a willingness to accept trades unions in their present form as being satisfactory and beyond criticism. I am not willing to accept trade unionism in that sense. No doubt trades unionism has been an agency for great good. On the other hand, the strength of trades unionism lies in conditions which are largely eliminated when scientific management is developed and applied. Mr. Valentine was rather willing to assume that scientific management is wrong in not taking his view on that point, without definitely outlining what the trades unions stand for, what their qualifications are for participating in the determination not only of the question of consent, but in the determination of the methods to be followed in the operation of the establishment.

I think without defining the qualifications, that such a plan as Mr. Valentine lays out would not only be impracticable but dangerous, not only to capital, to those interested financially in the business, but to the consumer and the very men whom he aims to benefit and safeguard. It has never been brought to my attention that trades unionism has anything to offer to any one excepting those who are immediately in the group, those governed by the union or who compose the union. In its present form, trades unionism is based and founded upon selfish motives. You have the bricklayers organized, and they try to force up wages without regard to the effect that it is going to have on other groups. One group will often take action which is inimical to the welfare of society at large. That cannot go on and be a good thing for the world. Before such a plan as Mr. Valentine outlines could be made practicable, trades unions have got to be organized in such a way as to be economically sound and progressive. At present trades unions have nothing to offer.

It strikes me that if trades unions were in a position to go to the employer and say, "We are prepared to submit a plan and to offer means for carrying it out which will enable you to give higher wages and shorter hours to the men and at the same time satisfy the stockholders in the matter of dividends," the present opposition of most employers to trades unions would disappear. The thought also occurred to me that if the money that is today spent on strikes and spent in other ways by trades unions were devoted to securing an interest financially in businesses, that, perhaps, would be a channel through which trades unions might secure their representation in the carrying on of business.

Mr. Charles W. Mixter[2]: I am not going to attempt a definition of democracy; but I wish to state two facts about it often overlooked. It is commonly assumed that democracy means progress and liberality by its very nature. Sir Henry Maine brought out years ago the fact that under stable conditions, democracy is the most ultra-conservative, stand-pat thing in the world; that it becomes just opposite of liberality and progress. On the other hand, under unstable conditions democracy is apt to disregard the experience of the past and rush headlong into rash innovations and experiments. Rarely is democracy in practice, over considerable periods, other than one of these extremes.

All of us who have talked with Mr. Taylor and studied his ideas recognize that what he stood for, and what scientific management on the human side stands for, may be summed up in this way: To treat men like men. That means consent, of course,—a certain kind of individual consent founded on leadership and a system of things in the shop which is to a degree "a government of laws." A law means "a standing rule to live by," not necessarily of democratic origin.

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But Mr. Valentine wants group consent,—an organized and even artificial consent giving labor an equal voice in the management. In the "discussion" reprinted with *Shop Management,* Mr. Taylor said: "In any executive work which involves the co-operation of two different men or parties, where both parties have anything like equal power or voice in its direction, there is almost sure to be a certain amount of bickering, quarrelling and vacillation, and the success of the enterprise suffers accordingly. If, however, either one of the parties has the entire direction, the enterprise will progress consistently and probably harmoniously, even though the wrong one of the two parties may be in control." That is moderately stated and it is common sense.

Under the system Mr. Valentine advocates, if I understand him, there would be dualism of control in industry,—a dualism which would bring endless confusion in industrial society at large as well as in each particular establishment. We have a striking historical example of how that sort of dualism works, in the case of the Roman Republic during the period when the Romans tried to run things by means of the tribune of the patricians and the tribune of the plebs, each with a veto on the other,—an absolutely impossible, disastrous arrangement.

In any discussion of consent and control in industry we are dealing with matters essentially governmental. Private business is private government. The greater part of the ordering of the affairs of the world is carried on not by what we ordinarily think of as the Government, but by the many private governments. They are the agents of society to secure discipline, order, economy. They are clothed with power by society to get the world's work done. But each of them stands on its own feet and must be self-supporting: they cannot draw on the tax-payer for support. In any dispute in the conduct of an industry the final say at present is with the financially responsible owners of the business, or their representatives. That is the entrepreneur system of industry under which we live; that is the prerogative of management resting on ownership sanctioned by law. It means an undivided sovereignty.

Now it is this whole order of things that is challenged by all radicals today. The socialists say, man fashion, "Let us have public ownership"; but the idea of the syndicalist, the latter-day industrial democrat, is to control industry by mass action without public ownership. The syndicalists would let the private industrial governments go on after a fashion but would have the workers enjoy an equal voice in their management through Valentine's form of consent. They have a hankering for power without responsibility, an itch to control things which they do not own. If they had their way it would bring a divided sovereignty, a dualism, into industry that would be fatal.

Mr. William L. Lyall[1]: Many employers, ourselves among others, are considering how we can make the employee still more interested in the business by giving him a sense of partnership and ownership. It is extended in our plant to those who have developed in the work to a certain position of responsibility where they appreciate what it means. We hesitate to extend it to the rank and file for one reason, that we feel that the ordinary industrial enterprise in these days, unless it is a monster concern, is subject to the possibilities of shipwreck and trouble and that therefore with the rank and file it is a question whether it is wise to ask them to put their savings into an enterprise which may be subject to some hazard.

Mr. Carl G. Barth[1]: Mr. Barth expressed his hearty approval of the beautiful theories propounded by Mr. Valentine; but related some experiences tending to show the impossibility of living up to them under the present attitude of workers towards their employers. He thus related a case of a company whose employees had been benefited to a remarkable extent, and showed pretty clearly that the results would never have been obtained, if he had gone about their attainment by first attempting to obtain the consent of the workers in the manner proposed by Mr. Valentine.

Mr. Valentine: There are two things that I particularly want to leave on this record: One is that I think one of the reasons our minds have not met on a good many points is that I am looking at the matter from an entirely different point from that from which you are looking at it. I am looking at it from the belief that it is the duty of industry and consequently the duty of every particular branch of industry to be a part of the educational system of the world. Just as I believe that it is the duty of industry to pay a minimum living wage, so I believe that it is the duty of industry to provide certain minimum conditions of education. I am afraid that if industry and each particular concern in industry does not attempt to work out some educationalizing form of industrial citizenship, there will be a great many more cataclysms in the reconstitution of affairs in the coming century than need be.

The reason I hold that belief in education in industry is that I am not accustomed to divide my thinking along the lines of practice and theory as those two terms have been suggested here. To my mind there is not a very valid distinction between theory and practice. I am asked questions, sometimes by employers, sometimes by employees and unions and sometimes by one form or another of governmental bodies as to what is likely to happen to them next. That is the practical question that is frequently put up to me. "Here is a certain rotten condition in which we find ourselves. Is it due to our own lack of capacity, lack of intelligence? Is it due to this rotten selfish demand on the part of the unions? Is it due to unwise state legislation? What is it due to? Can you help us in any way to find out?" My job is to investigate and see if I can furnish any evidence at all to help them find out. It is a very practical, immediate matter. I am no more interested in general conditions and theories as dreams than you are, but if we can see ahead, to keep from butting our heads into a stone wall, it will be a good thing for us to do a little thinking. It is most important to try to find some way out. These cases come up in innumerable different forms. I do not believe that Mr. Sanford Thompson will mind my mentioning the fact that he and I together are doing a job where we are employed by both the trades unions and manufacturers who each pay us half of the amount of money that is paid to us for our services. So I want you to see that this is an absolutely practical matter, using that word with all reverence for it that you have.

In speaking of shoe organization I want to try to clear up, if possible, one or two misconceptions. I have not been advocating any new mechanism. I have been trying to indicate, not any particular terminology or form of mechanism, simply the fact that these various forces did exist. I wished to suggest a line of thinking, a line of scientific questioning in your minds, which might enable you to meet these practical propositions that come up from day to day. If it be true that you as a continuing society are going to be confronted with and have to think these things out, the

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